1 Introduction

This document presents the steps and results of Phase 0 of the project, which involved setting up an Ubuntu virtual machine, installing Mininet, and testing a basic network topology. All tests were executed on Ubuntu Desktop 24.04.3 LTS running inside VirtualBox.

2 System Setup

2.1 Ubuntu VM Configuration

- OS: Ubuntu Desktop 24.04.3 LTS
- Virtualization: VirtualBox
- RAM: 3 GB
- CPU Cores: 3
- Storage: 15 GB (VDI)
- EFI: Disabled

2.2 Mininet Installation

Mininet was installed using the default Ubuntu repository.

```
sudo apt update
sudo apt upgrade -y
sudo apt install mininet -y
mn --version
```

3 Test Results

3.1 Mininet Version Output

The following output confirms the Mininet version installed:

```
slasher@slasher-VirtualBox:~$ mn --version
2.3.0
```

3.2 Pingall Connectivity Test

After launching the default Mininet topology using `sudo mn`, the connectivity test was executed:

```
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2
h2 -> h1
*** Results: 0% dropped (2/2 received)
```

This confirms that both hosts (h1 and h2) were able to communicate successfully with zero packet loss.

3.3 Host-to-Host Ping Test

A manual ping test was performed from h1 to h2:

```
mininet> h1 ping -c 3 h2
PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=64 time=0.526 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=64 time=0.139 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=64 time=0.087 ms

--- 10.0.0.2 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2057ms
rtt min/avg/max/mdev = 0.087/0.250/0.526/0.195 ms
```

This confirms the stability and successful configuration of the Mininet environment.

4 Conclusion

The Ubuntu VM and Mininet environment were successfully installed and tested. The default Mininet topology functioned correctly, with both `pingall` and manual `ping` showing zero packet loss. The system is now fully prepared for the next phase of the project.